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ABSTRACT

Some aspects of a grass roots evaluation training program are presented. The program consists of two elements: (1) a series of 11 slide/tape individualized self-paced units, and (2) a six-week summer program. Three points of view on this program are: (1) University graduate programs in quantitative areas are usually consumed by specialists; (2) Professionals are frequently being required to make critical evaluation decisions; and (3) A large proportion of the decisions made at the building level require practical training. A unit outline of the program is attached. (CK)

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GRASS ROOTS PROJECT EVALUATION

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I have slightly changed the title and expanded the scope of this paper from that which you were led to expect. I did this because I kind of wanted to, and because I felt the penalties for so doing probably were not very severe.

In any event, in the next very few minutes, I want to describe some aspects of a grass roots evaluation training program which is being born, albeit with some difficulty, at the School of Education of Northwestern University. In the process, I hope to introduce my philosophy about the need for such a program, in the hopes that it might enter into the deliberations of other institutions.

At this point, the actually developed program consists of two major elements:

1) A series of eleven slide/tape, totally individualized and self-paced units dealing with important topics in the world of project evaluation. The overall goal, as

stated to the Wieboldt Foundation which originally funded the effort, was to develop a technique for people on projects -- people untrained in evaluation methods -- to train themselves to handle some of the frequently occurring evaluation tasks on a project.

2) The second aspect of our "grass roots" training program is a six-week summer program directed toward tooling-up in-service professionals to handle routine evaluation tasks. These professionals would not have career goals in the direction of evaluation, but would be people like assistant superintendents, principals, counselors, or interested teachers who would stay in their regular position, but would be prepared to handle frequently recurring evaluation tasks at the school building level.

So . . . the two currently operative aspects of our program involve some self-instructional units and in-service training to prepare practicing educators to solve local problems. What motivates such a program? Three interlocking points of view come to mind.

First, university graduate programs in quantitative areas are usually being consumed by specialists or specialists in training. Most of these people are working toward Ph.D. degrees. Few of these graduates will ever end up at the school building level, helping the practicing

educators make day-to-day evaluation decisions.

Second, many well meaning professionals at the building level are frequently being required to make evaluation decisions which are critical. These kinds of people have continually expressed to me their lack of confidence in these types of areas.

Finally, we observed that a large proportion of the decisions which must be made at the building level are not all that technical or theoretically that difficult. That is, a Ph.D. or even a Masters in evaluation techniques is really not required. What is required is some very specific, practical training program directed toward these practical evaluation problems.

With this background in mind, let me describe the two elements of the grass roots training program which are operational at this time.

First, the self-instructional units: These eleven units were developed over about an 18-month period and have gone through at least two sets of revisions. They are currently being produced and distributed through the Center for the Teaching Professions. The operation of the units goes like this:

First, the potential user needs to have a problem which is basically an evaluation problem. For example, perhaps he is a doctoral student who needs to construct

a questionnaire; or a building principal who needs to present the data from a survey in some sort of a printed report; or a teacher who wants to choose a standardized test for some reason. We have found, in our pilot studies and in the data gathered from people who have been using the units, that if a person uses the unit because a real need exists, the feedback is very good. In cases where people have used the units for large group instruction, the feedback has been less satisfactory. We believe that the reason for the dissatisfaction is frequently because the user feels he is receiving information which is of little importance to him or her.

Next, given that a particular subject has been identified for which a unit is prepared, the user reads a brief advance organizer which covers the major topics in the unit. This takes no more than five minutes.

The third step is the actual individualized presentation of the unit. The unit consists of approximately 60 slides with a 60-minute tape. The tape directs the user through a printed handout which is coordinated with the slides. The picture and the audio part may direct the student to do a particular example or solve a problem before moving on to subsequent slides. Thus, we have built into the system two techniques for active involvement by the user: First, the user must do these problems and answer the questions

which are part of the unit. Second, the user must actually handle the advancing of the slides manually. We did this on purpose so that the user would not be a passive receiver of information, but would rather be forced to take part in the learning process. Finally, after the person has completed the units and reviewed any notes he may have taken, a mastery test is available. Some people prefer not to take the test and feel that it is unnecessary -- which is fine; but in instructional settings, it is frequently desireable to have some sort of performance measure.

The entire process involves somewhere from an hour and twenty minutes to two hours -- depending on how many times the user stops the tape and the slides to take notes and review questions.

We have a handout which lists the topics of the units and gives a brief description of each. Briefly, though, the units cover topics like: choosing a sample of different kinds, testing statistical hypotheses, avoiding common errors in evaluation and research, constructing questionnaires, selecting and using standardized tests, some technical issues in testing, interviewing techniques, data presentation techniques, computer applications in education, some hints for project evaluators, and specifying behavioral objectives.

These units have been used in a variety of settings. For example, funding agencies have purchased some of the units

to be used for in-service programs to train staff members for better evaluation of proposals. Universities and colleges have the units on file to help with instruction and research. They have been used by school districts for in-service work. It appears to us, given the very positive response we have received from people who have viewed the units, that this kind of approach to grass roots evaluation is well-received.

The second aspect of our program involves the in-service training of practicing educators to handle key evaluation problems. The program has not been conceived as a degree program, although degree credit can be earned. The program has also not been conceived for graduate students in training. We are trying to limit enrollment to people who are actually working in school buildings and who intend to return to that same building in the following year. The training program will involve a good deal of case study work.

A participant will have the option of enrolling in an on-going evaluation practicum during the eight-week experience. That is, the participant can enroll in an independent study under the direction of a faculty member where the topic of study would be a current evaluation problem in the district. The instructional techniques will include self-instructional units, simulation activities,

books and lectures.

The workshop will involve six or eight weeks (depending on the enrollment option chosen) of intensive training in sepcific evaluation topics. In addition, a series of district-wide in-service programs on evaluation topics will be outlined for possible use in the district.

For students enrolled in the Graduate School, two or three units of graduate credit can be earned, depending on the enrollment option chosen. A "course" is one academic quarter of work and is the equivalent of two and two-thirds (2 2/3) semester hours or four quarter hours of credit. Only students who are enrolled in a degree program in the Graduate School at Northwestern will receive credit through the Graduate School. Other students will receive either undergraduate credit or non-degree graduate credit.

Topic: SELF-INSTRUCTIONAL UNITS ON EVALUATION AND RESEARCH

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This document will have four sections, as follows:

I. Brief outline of the eleven self-instructional units.

II. Description of the format and technique used in the units.

III. Brief list of possible uses for the units.

IV. Description of other related materials which will soon be available.

I. BRIEF OUTLINE OF THE ELEVEN SELF-INSTRUCTIONAL UNITS

UNIT I, "Overview," introduces the entire program and covers several data collection plans, plus the question of sampling. Topics include:

survey vs. sample survey -- survey vs. questionnaire -- justifying a survey -- mail surveys -- population -- types of data -- types of surveys -- types of sampling designs -- levels of content analysis; cautions -- unique characteristics, sources, and bias in historical research -- types and problems of developmental studies.

UNIT II, "Experiments: Testing Statistical Hypotheses," concerns itself with the experiment itself, the results, and sources of error. Topics include:

stating the general problem -- limiting the problem -- defining measures -- stating statistical and research hypotheses -- performing the experiment -- probability distribution -- comparing the results to the statistical hypothesis -- making a conclusion -- type I error -- type II error -- level of significance.

UNIT III, "Avoiding Common Errors in Evaluation and Research," begins with a review of the hints and cautions included in the other ten units, and continues with cautions in the following four areas of experimental design:

defining and controlling variables -- choosing a sample and making inferences from it -- constructing artificial stimulus and response situations in the assessment phase -- providing for reliable interpretation of results.

UNIT IV, "Questionnaire Construction," presents basic guidelines for preparing a questionnaire from deciding whether to use one through planning follow-up procedures. Topics include:

Is the questionnaire the best technique? -- advantages and disadvantages -- specific steps to follow, from defining population to preparing report -- appearance -- information to include -- directions -- cover letter -- mailing -- follow-up efforts -- techniques for non-responders -- decisions about content and wording -- item formats -- special scaling formats.

UNIT V, "Selecting and Using Standardized Tests" is an introduction to the classification of standardized tests and types of item formats. Topics include:

How to find a measure you need -- differences between standardized and nonstandardized tests -- common classification of standardized measures -- maximum performance tests classified by use -- typical performance tests classified by use -- cautions in typical performance tests -- types of item formats -- cautions in choosing item formats.

UNIT VI, "Technical Issues in Testing," considers standards of comparison for tests and matters of test accuracy. Topics include:

norm-referenced measures (method of construction, key ideas, test items, uses reporting scores) -- criterion referenced measures (same information) -- validity -- reliability -- standard error of measurement -- cultural bias.

UNIT VII, "Data Collection by Interview" introduces the characteristics of the interview as a data gathering technique, and presents step-by-step procedures. Topics include:

characteristics -- potential uses -- prior considerations -- defining your research problem -- specifying the objectives of the study -- considerations in the design of the study -- choosing the sample -- type of questions to ask -- wording and question order -- importance of setting the atmosphere -- initial impression -- guidelines for questioning -- recording responses -- using probes -- closing the interview -- tabulation and analysis of results -- errors caused by interviewer's personality and approach -- recording errors -- non-respondents.

UNIT VIII, "Data Presentation Techniques" deals with various kinds of charts, graphs, and tables that are frequently used to present data in final reports. Topics included:

ordered vs. unordered categories -- frequency distribution -- simple vertical or horizontal bar graphs -- frequency polygon -- cumulative display (ogive) -- compound bar graph -- component bar graph -- bilateral bar graph -- "pieces of pie" display -- some things to avoid in charts -- scatter diagrams (data trend charts)-- rules for creating tables -- purpose of tables -- gathering and interpreting data for tables -- cautions.

UNIT IX, "A Layman's Introduction to Computer Applications," orients the neophyte to the computer including how it works and how it can help him. Topics included:

computer characteristics -- data processing vs. computing vs. computer -- input, handling, and output processes -- related machines for the computer user -- steps in writing a program -- computer storage and tabulation of survey results and tests -- computer simulation -- computer assisted instruction and computer managed instruction -- national data bank.

UNIT X, "Hints for Project Evaluators" is designed as a guide for project directors and project evaluators. Topics included:

impact of the program -- project "promises" -- budget -- prior commitments and real power -- timetable -- continuous outcome vs. intervention evaluation -- considerations in a continuous assessment model -- the evaluator as a communications facilitator -- "action now" philosophy -- the evaluator as number interpreter -- evaluating objectives.

UNIT XI,"Specifying Behavioral Objectives" teaches the user how to write and evaluate behavioral objectives. Topics included:

performance terms -- conditions of performance -- criterion level -- cognitive levels (taxonomy) -- verb choice -- why use behavioral objectives -- how to use them -- when to use them -- where to use them -- answering criticisms of behavioral objectives.

II. DESCRIPTION OF FORMAT AND TECHNIQUE USED IN THE UNITS

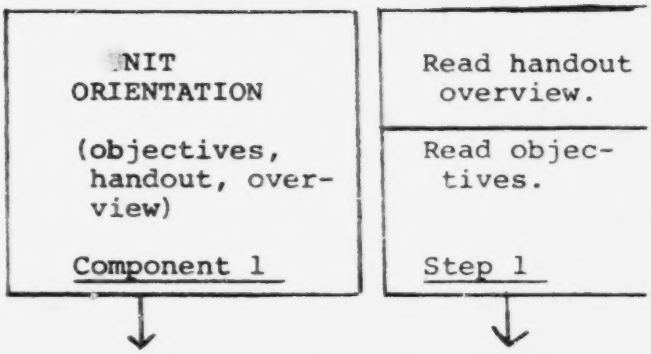
The project format is designed for individual use with maximum flexibility. The one or more individual work positions which would be established require only a manually operated slide projector, a cassette tape player (probably equipped with headsets), and a place for the student to work. To maximize the individuality of the units, the tape recorder and slide projector operate independently of each other, to allow the student to progress through the unit at his own pace. That is, he can listen to the recorded message as often as necessary, stop to take notes, or review a series of slides more than once.

Individualized flexibility is also created by the self-contained character of each unit. That is, the user can choose to use only those units which are most appropriate to his needs. While the units are indeed closely related, each operates independent of the others and focuses on a specific concept. Thus it is not imperative that the user complete all eleven units to benefit from the program.

The four steps in the presentation process are Pre-organization, Instruction, Evaluation, and Feedback. Each is described in more detail below.

Step 1: Pre-organization

The person is expected to read a very brief (perhaps 6 to 8 page) outline of the unit before beginning to interact with the machine. This pre-reading operates as an advance organizer for the user. Most people are more comfortable and confident in working through a unit if they know in advance the general areas of content which will be covered.



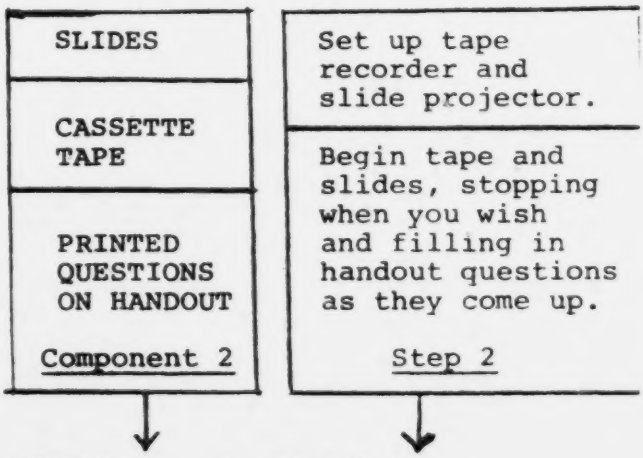
The pre-reading actually has another purpose as well. The experience we have had with self-instructional units leads us to believe that the student must be actively involved -- in a physical as well as cognitive way -- with the presentation. If not, attention wavers and the student begins to view the slides as if he were viewing a news commentary or dramatic presentation on television. To avoid this questions are asked in the actual presentation, and the handout leaves spaces for responses to these questions. The questions are asked in such a way that the response is important to the flow of the program so that the student will be at a disadvantage if he simply does not respond.

Step 2: Instruction

The primary instruction takes place in this step. The instruction comes through three modes.

VISUAL: Pictures, charts, diagrams, outlines, cartoons, a variety of visual forms are presented through the use of a slide projector.

AUDIO: Linked to the visual part is the audio presentation, through the use of cassette-type recorder and playback equipment.


SLIDES
CASSETTE TAPE
PRINTED QUESTIONS ON HANDOUT
Component 2
Set up tape recorder and slide projector.
Begin tape and slides, stopping when you wish and filling in handout questions as they come up.
Step 2

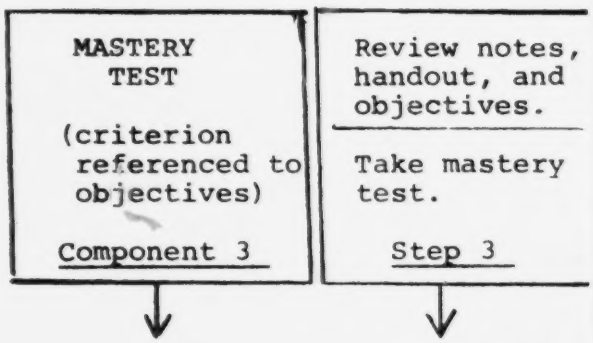
PRINTED INFORMATION AND WRITTEN RESPONSES: As mentioned in Step 1, the pre-reading handout leaves room for responses to questions asked by the visual or audio parts. This handout also allows room for the students to take notes.

Two other comments regarding Step 2 are appropriate and important.

a. Equipment can be purchased which synchronizes the audio and video parts of the presentation. That is, through the use of electronic signals, the slides will advance when a certain portion of the audio has been completed. In these units, the synchronized equipment will not be used. Three important reasons exist for this decision. In the first place, when the student must advance each slide individually by himself it keeps him alert to the presentation. That is, advancing to the next slide is another advance organizer. Secondly, freedom from a programmed time sequence allows for individual differences. Some students will want to dwell on certain slides, or take more detailed notes than others. Finally, the initial cost and upkeep on the synchronized units are considerably higher.

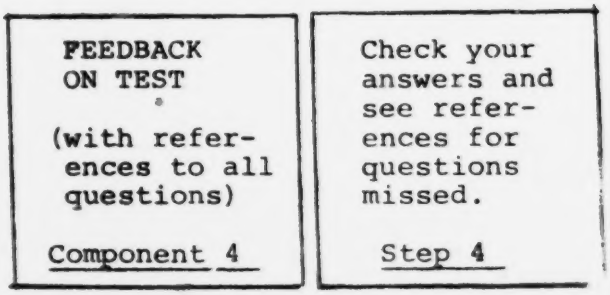
b. Three modes are used (audio, visual, printed) and all three modes are used in the primary instruction. That is, sometimes the audio is the prime instructor, backed up by the visual and printed. Other times one of the other two modes takes over as the prime instructional mode. This is done to make the presentations more interesting and to keep the student attentive to all three modes.

Step 3: Evaluation



When the student has completed the machine interaction to his own satisfaction and has reviewed his notes for a few minutes, a mastery-type test is administered. The mastery test will be criterion referenced. That is, the specific objectives of the unit will be stated for the student, and the items will reflect mastery or non-mastery on these objectives. The student's performance on the mastery test will not be compared to other students. Instead, it is compared to the criteria specified. Only two scores are reported: either the student reaches mastery on the criteria, or he does not. No grades, percentiles, standard scores, or stanines are reported.

Step 4: Feedback


FEEDBACK ON TEST
(with references to all questions)
Component 4
Check your answers and see references for questions missed.
Step 4

The mastery test should be scored and the feedback provided immediately to the student. This can be done quite simply by a clerk who is on duty in the room with the equipment. Each item in the mastery test should be keyed to some available source so that the student

can quickly find the answers for questions missed.

If a student does not reach the prescribed level of mastery required he will be asked to go through the unit a second time. Past experience has shown that only a small proportion of students fail to reach mastery on the first try, and of those who do not, all reach mastery after two efforts.

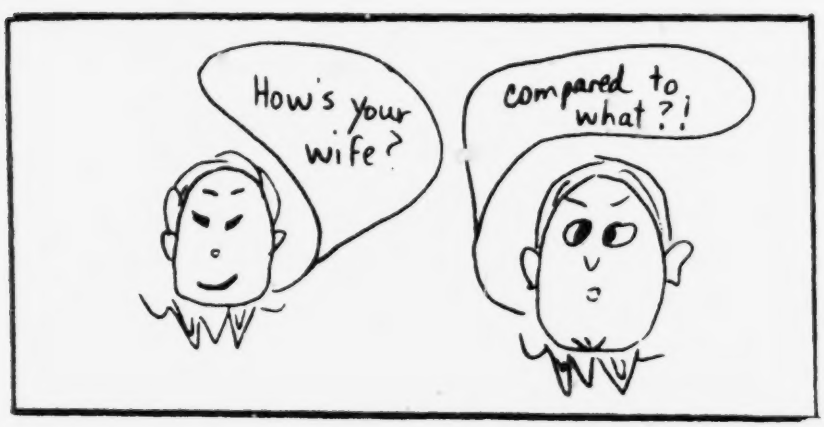
Here are two examples of typical frames(the handout, slides, and recorder operating simultaneously):

EXAMPLE I

HANDOUT:

> . . . a percentile is a way of comparing your performance to that of others.

SLIDE:



TAPE:

> Now that's the key to interpreting a percentile rank, namely, "compared to what?" The raw score, the number you get right on a test doesn't change, but the reported score, the percentile rank reported, changes whenever the comparison group changes. It's like the fellow who says, "How's your wife?" and you respond, "Compared to what?" It's the comparison that's important.

EXAMPLE 2

HANDOUT:

> A normative test is based on a comparison of each person's score to the scores of a pre-selected and pre-tested norm group.

SLIDE:

> NORMATIVE MEASURE
>
> 1. A general area is defined.
> 2. Items are written and tried out.
> 3. Items which discriminate are maintained.
> 4. A representative group of people is tested (the norm group).
> 5. You are tested. Your score is reported as a comparison to the norm group.

TAPE:

> Now here's how a norm-referenced test is built. First a general area is defined and the items are written and tried out. Any item which discriminates among the people in the tryout is maintained. Remember what we said about discrimination; in other words, the good people answer one way and the not so good another. Fourth, a representative group of people is tested. This is called the norm group and it is supposed to be representative of the other people who will later take the test. And as you can see there, number 5 some other person is tested -- you -- and your score is then compared to the norm group. It's a comparison: we take your test score and we don't report to you your raw score; that's not reported. What is important and what is reported is how you compare to the norm group.

III. Here are a few situations in which the program might be quite useful.

a. At the funding agency level to help the staff decide which among prospective proposals should be funded. A wide variety of state, federal, local, and private agencies are in the proposal-funding business. Since evaluation is such a key determinant in the success of almost any project, it seems reasonable that the more complete is the evaluation training of the staff, the higher the probability that the staff will be able to separate the promising proposals from the less promising.

b. At the funding agency level to help with the evaluation of projects which do get funded. Here the funding agency would have the self-instructional units available for use by those funded and by agency staff to assist with the evaluation of the variety of projects.

c. At some central depository of audio-visual and self-instructional materials for laon to people on projects of all kinds. A large school district, a consortium of small districts, a college or univeristy, a county board of education, or a variety of other agencies may have some central library which includes self-instructional materials. Through such a center, the units could be made available to anyone with an evaluation need.

d. As part of a foundations program for certain graduate school departments. Many graduate programs require "foundations" or "tool" courses as a requirement for an advanced degree. Examples include foreign language, computer, or research courses. For some doctoral areas, these units seem like a very reasonable and relevant substitution. Since the units are completely self-instructional, they have the advantage of not requiring the university to maintain a faculty member for this part of the instructional program.

e. As a supplement to or replacement of an introductory research and/or evaluation course at the university level. Many of the topics covered by the units are routinely covered in beginning research courses. With the availability of self-instructional units, the instructor would be freed from covering this material -- working more closely with the students or dealing with special problems. Using the units to supplement such a course has worked very satisfactorily here at Northwestern University.[1]

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[1] The results of this trial are summarized in the paper "On Making a Big Lecture Section a 'Good' Course" by John W. Wick. A copy of this paper is available on request. The paper will appear in Profiles in College Teaching, B.C. Mathis, and W.C. McGaghie, editors (in press).

f. The entire set of units can be used as a credit-producing technique for in-service teachers. The concept is under consideration at one state university whereby in-service teachers could earn college credits without actually traveling to the college to attend classes. In another state, the state Office of Education is considering establishing the set of units as one technique whereby teachers can receive salary or promotion credit in the local district without actually attending a college.

Other uses are certainly possible. These are just a few of those which have been suggested at this point.

IV. RELATED MATERIALS

Two sets of parallel presentations of this material are under preparation. These will be available in early 1973 and will be published by the Charles E. Merrill Publishing Company. The first set of parallel materials will consist of a consumable student workbook linked to approximately six hours of audio instructions. The student workbook will consist of approximately 350 pages of information, worked examples, and problems, which the student will complete on his own, following the audio directions given on the cassette-type tapes. The coverage of this program will be very close to that of the self-instructional slide/tape/printed program. In addition, Charles E. Merrill Publishing Company will publish a text paralleling the four measurement-related units in the program. The book will, of course, go into much more detail than that found in the units.

The three programs (the slide/tape/printed program, which is the topic of this mailing; the consumable student workbook/audio tape program; and the in-depth book aspect) are being prepared as independent presentations. The three parallel programs do not depend upon each other; but they will be supplementary. For example, either of the self-instructional units could be used very effectively with the more in-depth presentation in the book. The multiple format approach has been devised to provide for the most flexible possible use of these materials.

V. PURCHASE

See enclosed price list.

Price List

SELF-INSTRUCTIONAL UNITS ON EVALUATION AND RESEARCH

Complete Set of Eleven Units $260.00

includes: 11 sets of slides for the 11 units
11 60-minute tapes for the 11 units
One copy each of:

objectives for the 11 units
handouts and worksheets for the 11 units
mastery tests for the 11 units
keyed copy of mastery tests for the 11 units

user must provide:

slide projector
cassette player (preferably equipped with headsets)
reproduction of the printed material for student use

Single Unit (add $3.00 for handling) $26.00

includes: 1 set of slides
1 60-minute cassette tape
One copy each of:

objectives
handout and worksheet
mastery test
keyed mastery test

Extra Copies of Printed Material:

Package of 30 copies of student materials for a single unit (includes objectives, handout, and worksheet only for one unit)

$15.00

Package of 30 copies of mastery tests for a single unit

$12.00

For further information, please write:

Center for the Teaching Professions
Northwestern University
Evanston, Illinois 60201

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